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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,391	02/22/2002	Kofi Dankwa Anim-Appiah	TI-33234	1578

7590 06/29/2004

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EXAMINER

AMINZAY, SHAIMA Q

ART UNIT	PAPER NUMBER
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2684

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/081,391

Applicant(s)

ANIM-APPIAH ET AL.

Examiner

Shaima Q. Aminzay

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/22/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is responsive to communications: Application filed on 02/22/2002
Priority Date: 12/31/2001.
2. Independent Claims 1, 26, dependent claims 2-25, and 27-28 are pending in the case.
3. The present title of the application is "Antenna connection and switching for transmit and receive diversity".

NON-FINAL ACTION

Claim Rejections - 35 USC § 103

- ◆ The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- ◆ Claims 1-21, and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meredith et al. U. S. Patent number 5701596, and in view of Dam et al. U. S. Publication number 20010016504 A1.

4. Regarding claims 1, 2, and 26 Meredith teaches a wireless communication system (see for example, column 1, lines 13-20, column 3, lines 65-67 continued to column 4, lines 1-4), comprising: a number N of wireless front end units (see

for example, Figure 10, "radio channel Unit" one to N), and a number N of antennas (see for example, Figure 10, N antennas including the transmit filters, buffers and "Lossy combiner sum" units), and a switching arrangement (see for example, Figure 10, "1-pole-N-Throw" switches) connected between the N wireless front end units and the N antennas for permitting the wireless front end units to be switched into connection with the antennas (see for example, Figure 10, the switching arrangement connects between M number of "radio channel" units, and N number of antennas for permitting the radios to be switched into connection with antennas), and sharing N antennae among N wireless front end units (see for example, column 10, lines 16-33, the N number of antennas can be equal to the number of M radios ($M=N$)).

However, Meredith does not teach permitting any of the wireless front end units to be switched into connection with any of the antennas while also maintaining the remaining wireless front end units connected to respective ones of the remaining antennas

Dam teaches the teach permitting any of the wireless front end units to be switched into connection with any of the antennas while also maintaining the remaining wireless front end units connected to respective ones of the remaining antennas (see for example, Figure 4, the antenna array 460 can be connected to any of the radio transmitters (410) and receivers (420) through switches 480 and 490 while maintaining the remaining radios connected to respective antennas, paragraph [0030], lines 1-9, and [0033], lines 1-13).

It would have been obvious to one of ordinary skill in the art at the time invention was made to combine Dam's antennas arrangements and diversity combination techniques (see for example, paragraph [0012], lines 4-6, and [0013], lines 1-8) with Meredith's mobile communications interconnection of any one of a plurality of radios with any one of a plurality of antennas (see for example, column 1, lines 9-10, and lines 13-20) to provide mobile communication system with diversity combination technique for interconnection of plurality of radios with a plurality of antennas (see for example Dam, paragraph [0012], lines 4-6, and [0013], lines 1-8; Meredith column 1, lines 9-10, and lines 13-20), and to provide "the flexibility in operation of the transceiver to more efficiently perform certain transceiver functions, e.g., locating of a mobile terminal during access to the system" (Dam, paragraph [0013], lines 6-8).

5. Regarding claims 3, 4 and 5, Meredith and Dam teach claim 1, and further Meredith teaches a controller coupled to the N switches for synchronously controlling the N switches using a single control signal, and switching the N switches simultaneously (see for example, column 3, lines 7-31, and lines 49-64).
6. Regarding claims 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 23, 27, and 28, Meredith and Dam teach claims 1, 2, 13, and further Meredith teaches the N switches is a single-pole switch with N contacts and N-throw respectively coupled to the N antennas and coupled to the radios (see for example, column 6, lines 35-60).

7. Regarding claim 13, Meredith and Dam teach claim 1, and further Meredith teaches switching arrangement includes 2N switches (see for example, Figure 1A and 1B the controller (267) is connected to 240 and 217).

◆ Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meredith et al. U. S. Patent number 5701596, and in view of Dam et al. U. S. Publication number 20010016504 A1, and further in view of Vaisanen et al. U. S. Patent number 6560443.

8. Regarding claim 22, Meredith and Dam teach claim 21, and further Dam teaches the GSM systems (see for example, paragraph [0029], lines 10-13).

However, Meredith and Dam do not teach the front end units are Bluetooth and the standard IEEE 802.11.

Vaisanen teaches the Bluetooth units and the standard IEEE 802.11 (see for example, column 1, lines 8-14, and column 4, lines 43-50).

It would have been obvious to one of ordinary skill in the art at the time invention was made to combine Vaisanen's diversity antennas and wireless units with Dam's antennas arrangements combination techniques (see for example, paragraph [0012], lines 4-6, and [0013], lines 1-8), and with Meredith's mobile communications interconnection of any one of a plurality of radios with any one of a plurality of antennas (see for example, column 1, lines 9-10, and lines 13-20) to provide mobile communication system with diversity combination technique for interconnection of plurality of radios with a plurality of antennas (see for example

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Dam, paragraph [0012], lines 4-6, and [0013], lines 1-8; Meredith column 1, lines 9-10, and lines 13-20), and to provide "the flexibility in operation of the transceiver to more efficiently perform certain transceiver functions, e.g., locating of a mobile terminal during access to the system" (Dam, paragraph [0013], lines 6-8), and to further provide "sharing diversity antennas efficiently and as economically as possible" (Vaisanen, column 3, lines 44-46).

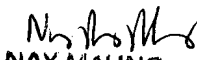
Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 form.

Inquiry

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaima Q. Aminzay whose telephone number is 703-305-8723. The examiner can normally be reached on 7:00 AM -5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 703-308-7745. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600's customer service telephone number is 703-305-3900.


Shaima Q. Aminzay
(Examiner)


NAY MAUNG
SUPERVISORY PATENT EXAMINER
Nay Maung
(SPE)

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Jun 23, 2004